

Approval Standard

Electric Submersible Motors
For Use In Class I, Division 1,
Hazardous (Classified) Locations

Class Number 3650
December 2013



Member of the FM Global Group

Approval Standard for Electric Submersible Motors For Use In Class I, Division 1, Hazardous (Classified) Locations

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1 INTRODUCTION

1.1 Purpose

- 1.1.1 This standard states Approval requirements for electric submersible motors for Class I, Division 1 hazardous (classified) locations.
- 1.1.2 Approval criteria may include, but are not limited to, performance requirements, marking requirements, examination of manufacturing facility(ies), audit of quality assurance procedures, and a follow-up program.

1.2 Scope

- 1.2.1 This standard contains the basic requirements for the construction and testing of electric submersible motors.
- 1.2.2 This standard is intended to be used in conjunction with Approval Standard's Class 3600-Electrical Equipment for Use in Hazardous (Classified) Locations - General Requirements; and Class 3615 - Explosionproof Electrical Equipment General Requirements.

1.3 Basis for Requirements

See Approval Standard 3600, Paragraph 1.5

1.4 Basis for Approval

See Approval Standard 3600, Paragraph 1.3

1.5 Basis for Continued Approval

See Approval Standard 3600, Paragraph 1.4

1.6 Effective Date

The effective date of an Approval standard mandates that all products tested for Approval after the effective date shall satisfy the requirements of that standard. Products FM Approved under a previous edition shall comply with the new version by the effective date or else forfeit Approval.

The effective date of this Standard is January 1, 2014 for compliance with all requirements.

1.7 System of Units

See Approval Standard 3600, Paragraph 1.7

1.8 Definitions

For purposes of this standard, the following terms apply, as well as joint construction definitions given in FM Approvals Class 3615 standard:

Dielectric Withstand Voltage – The ability of the motor to withstand certain voltages applied between current-carrying parts and dead-metal parts for a specified period of time without flashover or puncture.

Leakage Current – A current, including a capacitive coupled current, that may be conveyed between exposed conductive surfaces and ground.

Guide-Rail System – Apparatus used to raise or lower a submersible pump motor into a pit.

Lift Hoist Assembly – Means by which the pump or pump motor may be lifted and moved for the purpose of conducting maintenance, installation, etc.

Submersible Pump Motor – Rotating machine that transforms electrical energy into mechanical energy used to drive the wet end.

Submersible Pump – Combination of the wet-end and submersible pump motor designed to be connected together as an integral assembly and may be provided as a complete unit.

Wet End – Mechanical assembly required to be driven by rotational motion for the purpose of pumping, grinding, or mixing the intended fluid.

1.9 References

The following standards, test methods, and practices are referenced in this standard:

FM Approvals Class 3600, *Approval Standard for Electrical Equipment for use in Hazardous (Classified) Locations, General Requirements*

FM Approvals Class 3615, *Approval Standard for Explosionproof Electrical Equipment, General Requirements*

National Electric Code®, NFPA 70.

ANSI/UL674, *Electric Motors and Generators for Use in Hazardous (Classified) Locations*

ANSI/UL1004-1, *Rotating Electrical Machines- General Requirements*

ANSI/UL1004-3, *Thermally Protected Motors*

2 GENERAL INFORMATION

2.1 Approval Application Requirements

To apply for an Approval examination the manufacturer, or its authorized representative, should submit a request to:

Electrical - Director
FM Approvals
1151 Boston-Providence Turnpike
PO Box 9102
Norwood, MA 02062
U.S.A.

The manufacturer shall provide the following preliminary information with any request for Approval consideration:

- A completed Application/Request for Quote form.
- A complete list of all models, types, sizes, and options for the products or services being submitted for Approval consideration;
- General assembly drawings, complete set of manufacturing drawings, materials list, anticipated marking format, electrical schematics, nameplate format, brochures, sales literature, spec. sheets, installation, operation and maintenance manuals, and
- The number and location of manufacturing facilities.
- All documents shall identify the manufacturer's name, document number or other form of reference, title, date of last revision, and revision level. All documents shall be provided with English translation.

2.2 Requirements for Samples for Examination

- 2.2.1 Following authorization of an Approval examination, the manufacturer will be required to submit samples for examination and testing.
- 2.2.2 The test samples will typically be a complete assembly with all components mounted in a manner consistent with the manufacturer's instructions and intended application; but the exact sample requirements will be specified by FM Approvals either as part of the proposal or subsequent to a detailed design review after authorization of the proposal.
- 2.2.3 Requirements for samples may vary depending on design features, results of prior or similar testing, and results of any foregoing tests.
- 2.2.4 The manufacturer shall submit samples representative of production. Any decision to use data generated using prototypes is at the discretion of FM Approvals.